

REMARKS

Claims 1-20 are pending in the application, are rejected, and are at issue.

Applicant has separately filed formal drawings in which the duplicate use of numeral 24 has been corrected by changing the reference numeral for the housing to 25. The specification as amended above consistent with this change. Because the application was filed with informal drawings, the formal drawings are being filed now, so that they should replace the informal drawings.

Applicant traverses the objection to the specification and likewise the rejection of the claims as based on a non-enabling disclosure.

Particularly, the action states that the manner of controlling loop current is not described in detail but yet is essential to the practice of the invention. Applicant disagrees. The ways in which loop current can be controlled are numerous. The particular manner in which loop current is controlled is irrelevant to the claimed invention. In any event, loop current control is well known. For example, attached hereto is a document found in a quick Internet search entitled "4-20mA Current Loop Primer" published by DATEL, Inc. This primer generally discusses current loops and how they are operated. The present invention is not directed to current loop control. Instead, the present invention recognizes that with loop powered devices there is minimal power available to power the instrument as the instrument must operate on less than 4 milliamp current at 24 volts. This is discussed at page 7, line 15 through page 8, line 3.

Because output circuits which connect to a 2-wire process loop for controlling current on loop in accordance with a control signal are well known, as described in the above-

referenced specification and as described in the attached, the specification is enabling and the claims are supported.

The process instrumentation industry utilizes loop powered devices extensively for transmitting information on measured variables to control equipment. How the current is controlled likely varies with each and every manufacturer according to their particular designs and requirements. Additional information can be provided if necessary to further support this fact; however, applicant submits that the same is not necessary and should not be required.

Applicant traverses the rejection of claims 1, 4, 8, 15, 16 and 18 as anticipated by Saito et al. U.S. Patent No. 6,577,072.

Independent claim 1 specifies a loop powered process instrument. The instrument comprises a control circuit measuring a process variable and developing a control signal representing the process variable. An output circuit for connection to a 2-wire process loop controls current on the loop in accordance with the control signal. A power supply circuit is connected to the output circuit and the control circuit for receiving power from the 2-wire process loop and supplying power to the control circuit. The power supply circuit comprises cascaded charge pump circuits.

Saito et al. is not remotely related to the claimed invention. Saito et al. relates to a power supply. The power supply is connected to an AC input and includes output terminals. Saito et al. is not directed to a process instrument, let alone a loop powered process instrument. It does not measure any process variable. While current is a variable, it is not a process variable in the context of the claimed invention. While elements 306 and 308 of Saito et al. might be

thought of as two conductors, they do not form a 2-wire process loop. Nor is there any output circuit controlling current on any loop in accordance with a control signal. The action identifies 1018 of Saito et al. as a charge pump circuit. In fact, this circuit is a step-down circuit which performs on/off control to an LED lamp as well as a voltage step-down function and constant-current control. This is not a cascaded charge pump circuit receiving power from a 2-wire process loop and supplying power to a control circuit, as recited in the claim. As is clear, Saito et al. is not remotely related to the claimed invention. It does not disclose each and every element of the claim, arranged as in the claim. Therefore, there is no anticipation and the rejection is improper.

Because Saito et al. does not relate to the claimed invention, any obviousness rejection would also be improper.

Claim 4 depends on claim 1 and is not anticipated for the same reasons.

Independent claim 8 specifies a loop powered process instrument comprising a control circuit measuring a process variable and developing a control signal representing the process variable. An output circuit for connection to a 2-wire process loop controls current on the loop in accordance with the control signal. A power supply circuit is connected to the output circuit and the control circuit for receiving power from the 2-wire process loop and supplying power to the control circuit. The power supply circuit comprises a current source providing a select current to a plurality of cascaded switched capacitor voltage dividers.

Claim 8 is believed allowable for the same reasons discussed relative to claim 1. The action references cascaded switched capacitor voltage dividers within 1018 of Saito et al.

However, it does not define what is meant by these. These capacitors are used to turn an LED lamp on. They do not perform the function of the claimed invention. Claim 8 and dependent claim 15 are not anticipated.

Independent claim 16 specifies an improvement in a loop powered process instrument including a control circuit measuring a process variable and developing a control signal representing the process variable and an output circuit for connection to a 2-wire process loop for controlling current on the loop in accordance with the control signal. The improvement comprises a power supply circuit connected to the output circuit and the control circuit for receiving power from the 2-wire process loop and supplying power to the control circuit comprising a plurality of cascaded switch capacitor voltage dividers.

Claim 16 and its dependent claim 18 are not anticipated for the same reasons discussed above relative to claim 8.

For the above reasons, claims 1, 4, 8, 15, 16 and 18 are not anticipated or obvious over Saito et al. and withdrawal of the rejection is requested.

Applicant traverses the rejection of claims 2, 5, 9, 12 and 20 as obvious over Saito et al. These claims depend on independent claims 1, 8 and 16, discussed above. Because the independent claims are not obvious over Saito et al., these dependent claims are likewise not obvious. Therefore, the rejection ought be withdrawn.

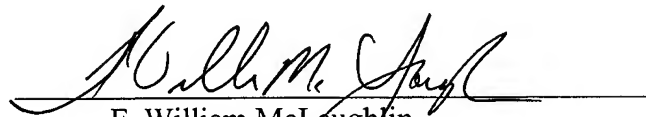
Applicant traverses the rejection of claims 3, 7, 10-11, 14 and 17 as obvious over Saito et al. As discussed above, because the independent claims are not obvious over Saito et al., the dependent claims likewise are not obvious over Saito et al.

Summarizing, Saito et al. is not remotely relevant to the claimed invention. It is not a loop powered process instrument. It is an LED lamp device included in a power supply. AC input power is converted to operate the LED lamp device. The action simply takes unrelated components of Saito et al. and mischaracterizes them based on applicant's claim language to bootstrap an anticipation and/or obviousness rejection which is improper.

Reconsideration of the application and allowance and passage to issue are requested.

Respectfully submitted,

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